

NIOSH/PRL Innovations to Improve Hearing Protection

NIOSH Decibel Dummy

- 👂 Educational tool to demonstrate noise exposure concepts
- 👂 Inexpensive – based on Styrofoam mannequin head and VU meter kit.
- 👂 Enhanced with NIOSH-designed A-weighting circuit
- 👂 Microphones in each ear linked to sound level LEDs in each eye: Blink **red** (high) **yellow** (medium) and **green** (low)
- 👂 High sensitivity (red = 70 dBA) for demonstrations at moderate sound levels; low sensitivity (red = 85 dBA) for demonstrations with potentially hazardous noise

Some possible demonstration scenarios:

- 👂 Proper and improper HPD use
- 👂 Benefits of sound barriers inserted between noise sources and dummy
- 👂 Asymmetric exposures (open car window, etc.)



NIOSH MultiFit Earplug Fit Research System

- 👂 Tests four subjects at a time
- 👂 Mobile – will be installed in NIOSH Hearing Loss Prevention Unit
- 👂 Flexible software allows multiple training and feedback scenarios
- 👂 Replicates ANSI S12.6 methodology through headphones
- 👂 Laboratory-grade instrumentation



NIOSH Sound Restoration Earmuff Evaluation

- 👂 Developing standard method to evaluate performance of sound restoration earmuffs
- 👂 Evaluating performance characteristics of currently available products
- 👂 Will provide guidance on use of sound restoration earmuffs in various noise environments



NIOSH QuickFit Earplug Tester

- 👂 Simple test for adequate (15dB) protection
- 👂 Inexpensive – based on earmuff and voice recorder circuit
- 👂 Test signal – standard 1KHz octave band noise
- 👂 15dB boost used for go/no-go check of adequate protection
- 👂 More reliable and accurate than subjective self-checks
- 👂 Can be used at any worksite every time earplugs are worn



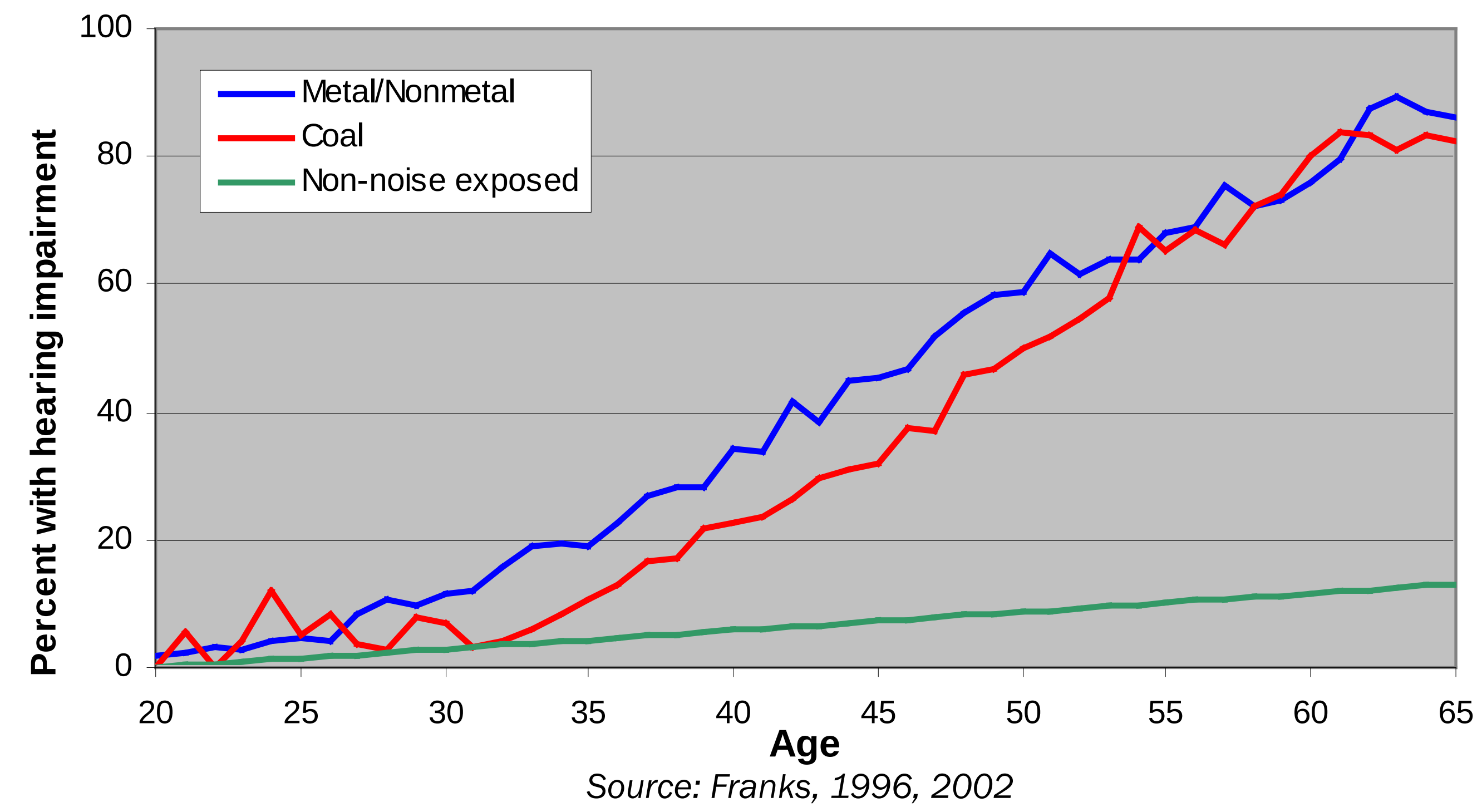
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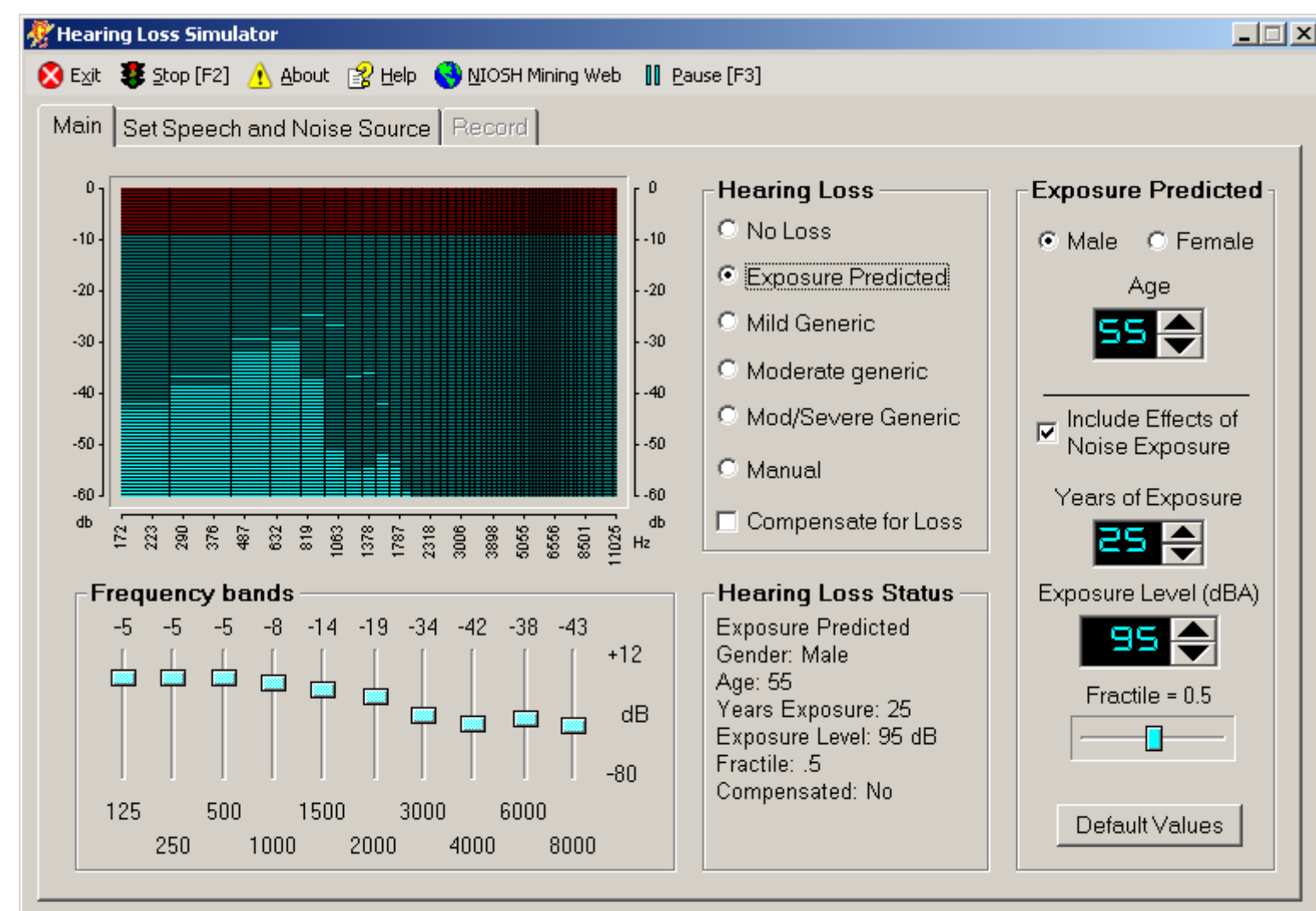
NIOSH/PRL Motivational and Training Solutions for Hearing Loss Prevention

Problem:

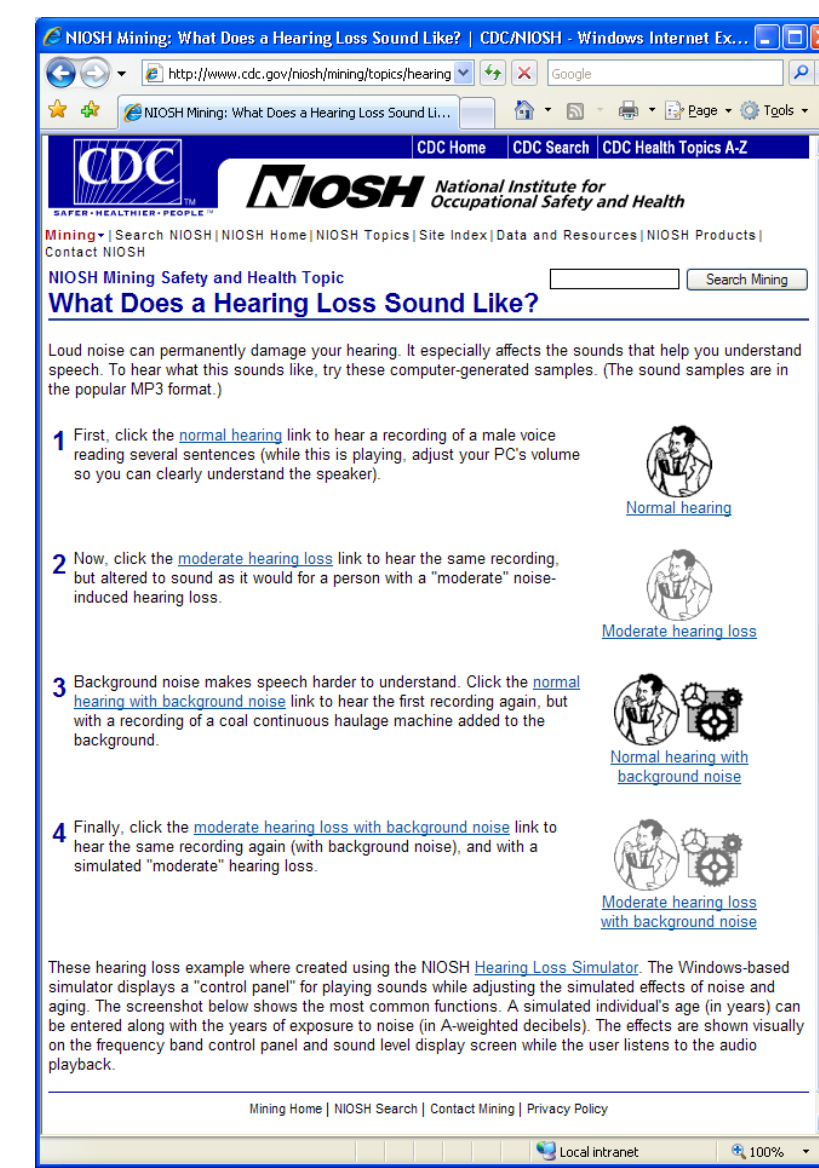
High rates of hearing loss among mine workers



Motivational Solution: NIOSH Hearing Loss Simulator



Windows software



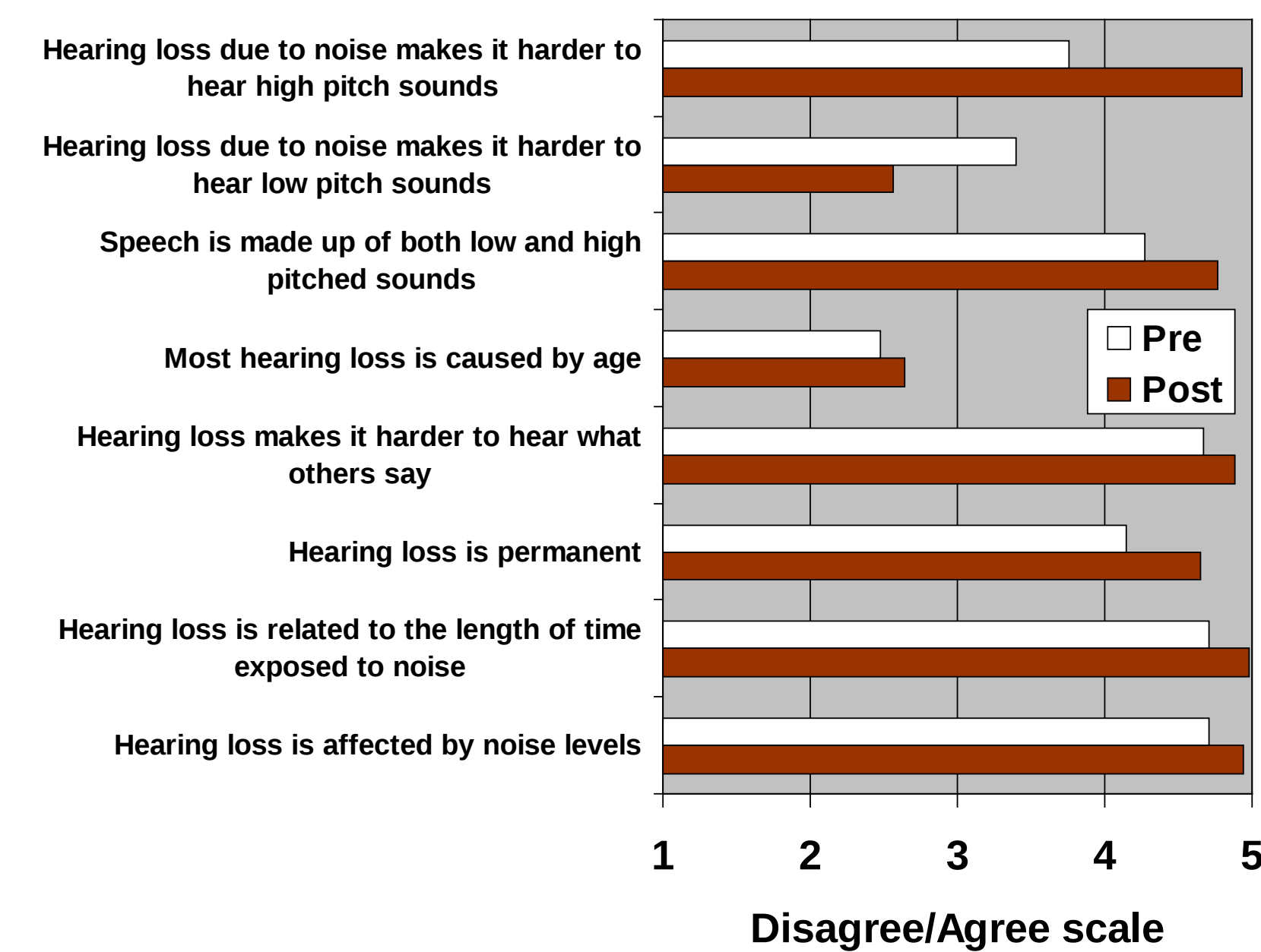
Web Samples

Evaluation

Change in Behavioral Intentions

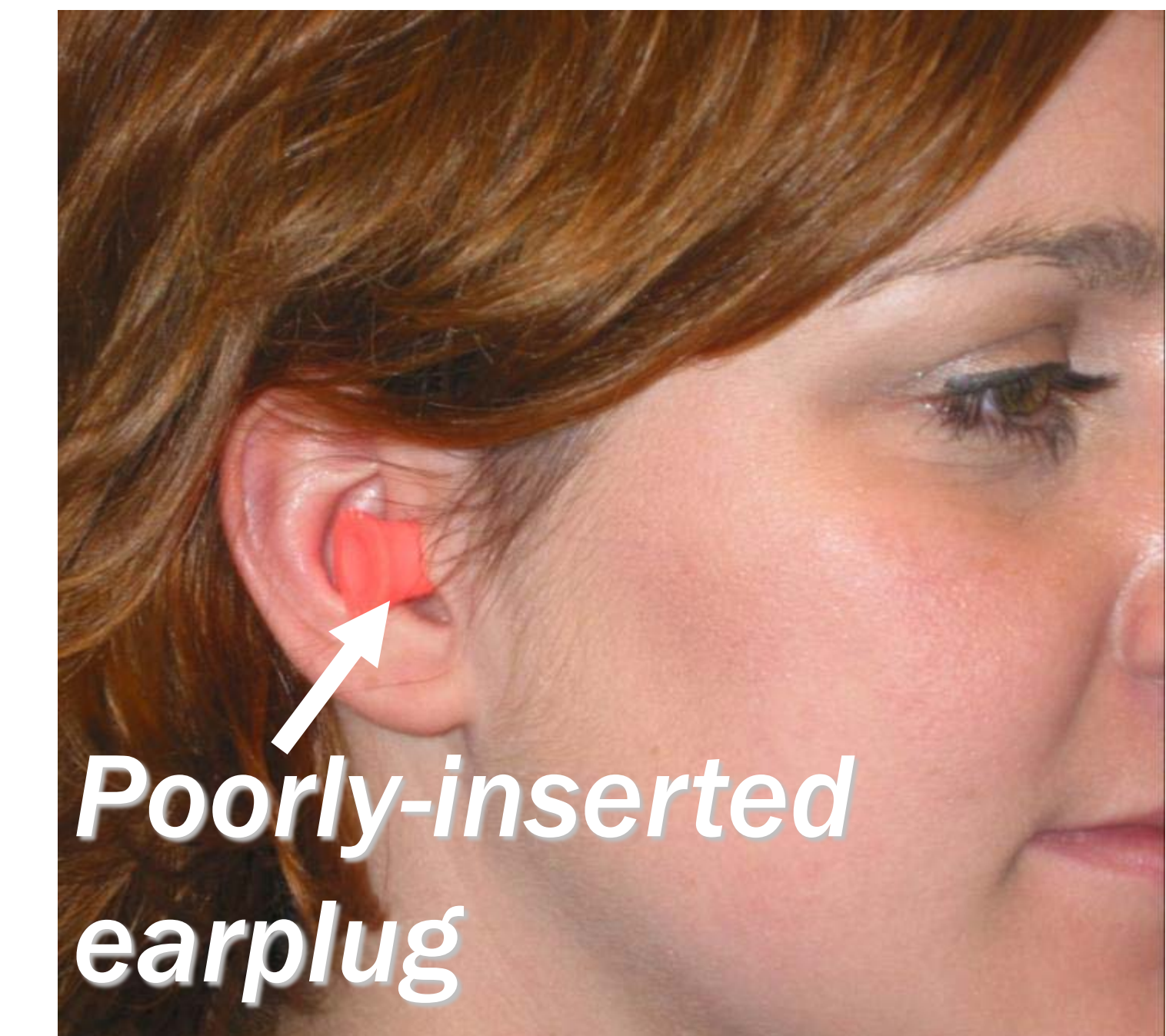
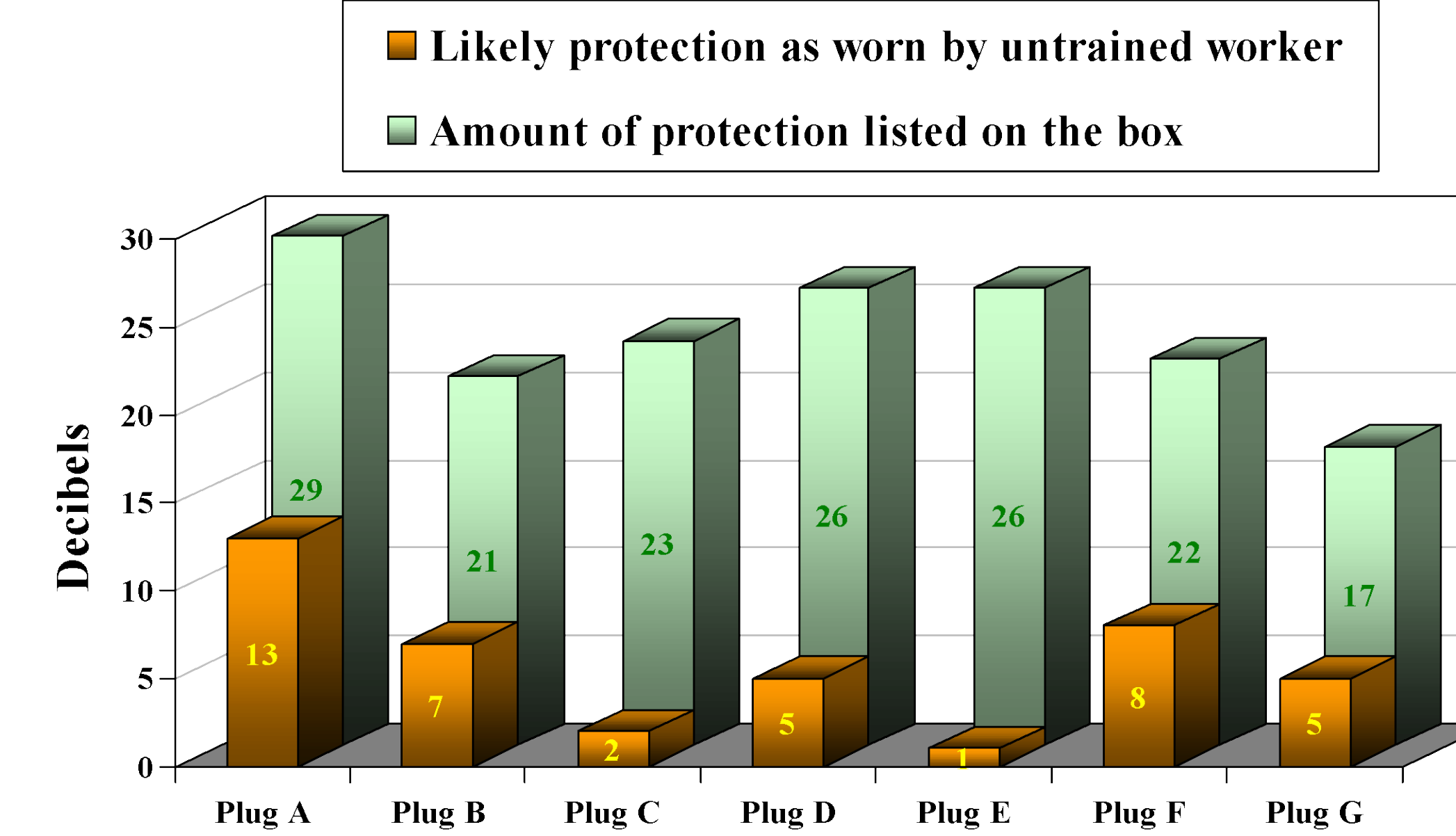


Change in Attitudes & Beliefs

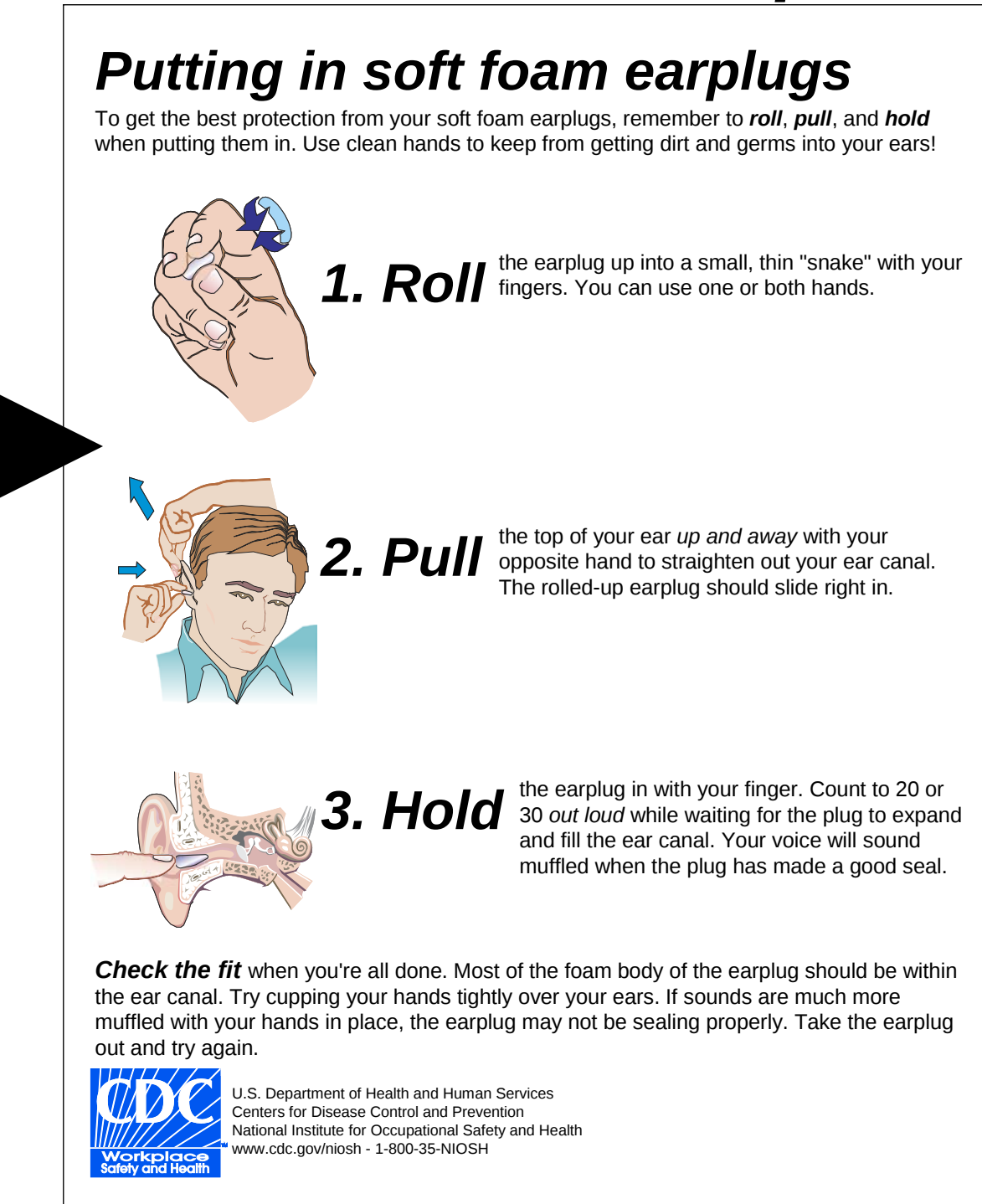
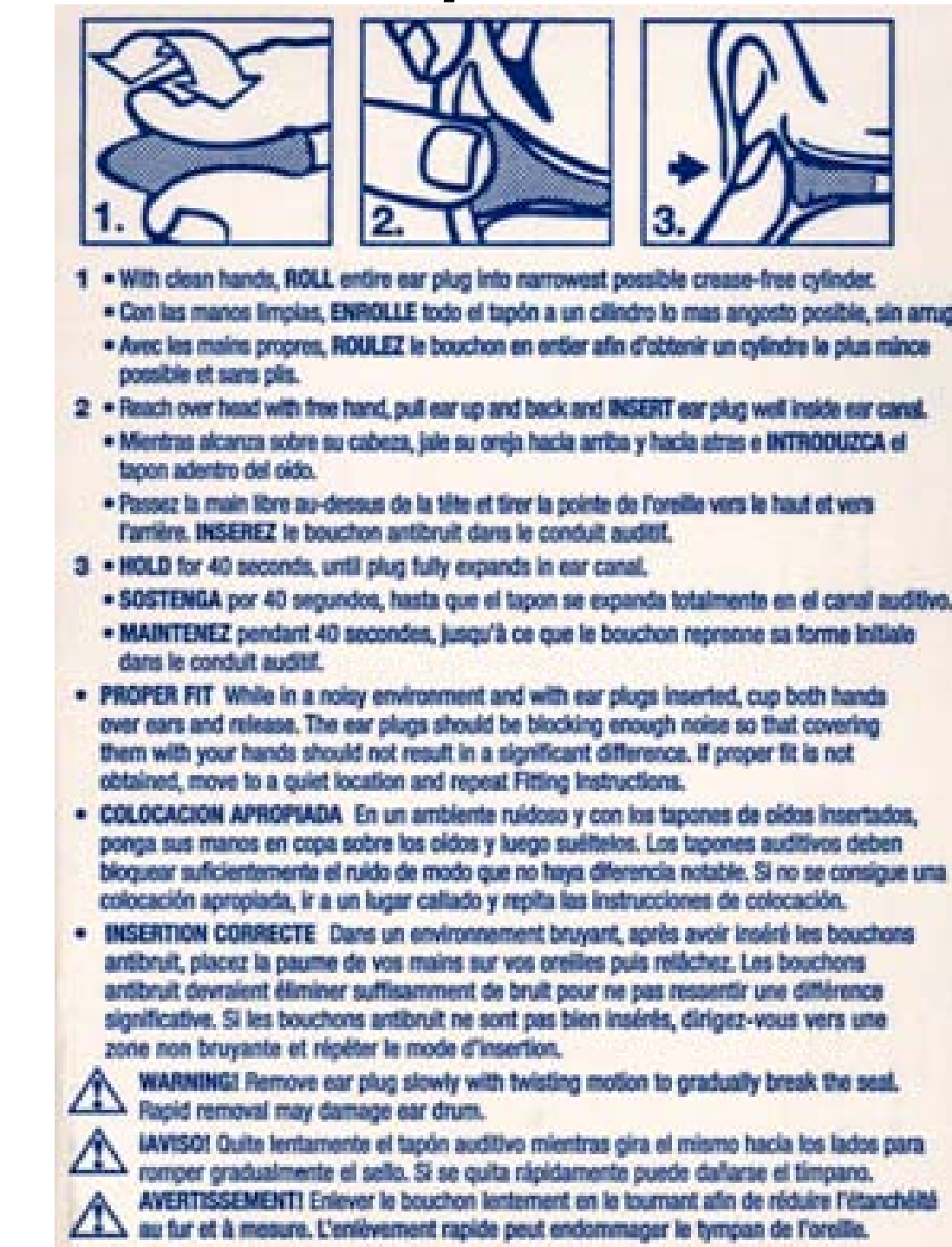


Problem:

Hearing protectors used incorrectly



Informational Solution: Simpler Roll-Pull-Hold technique

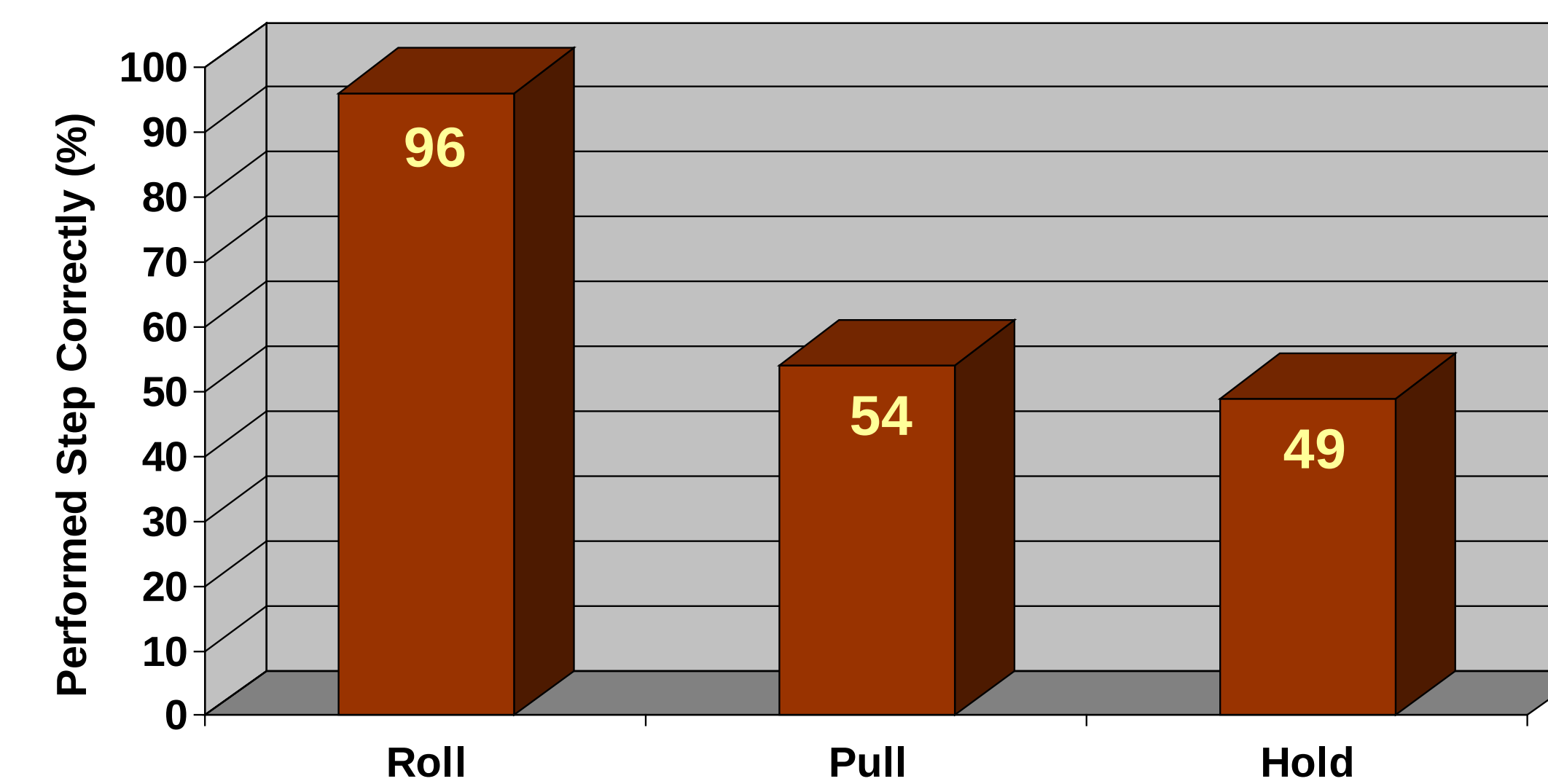


Manufacturer's instructions

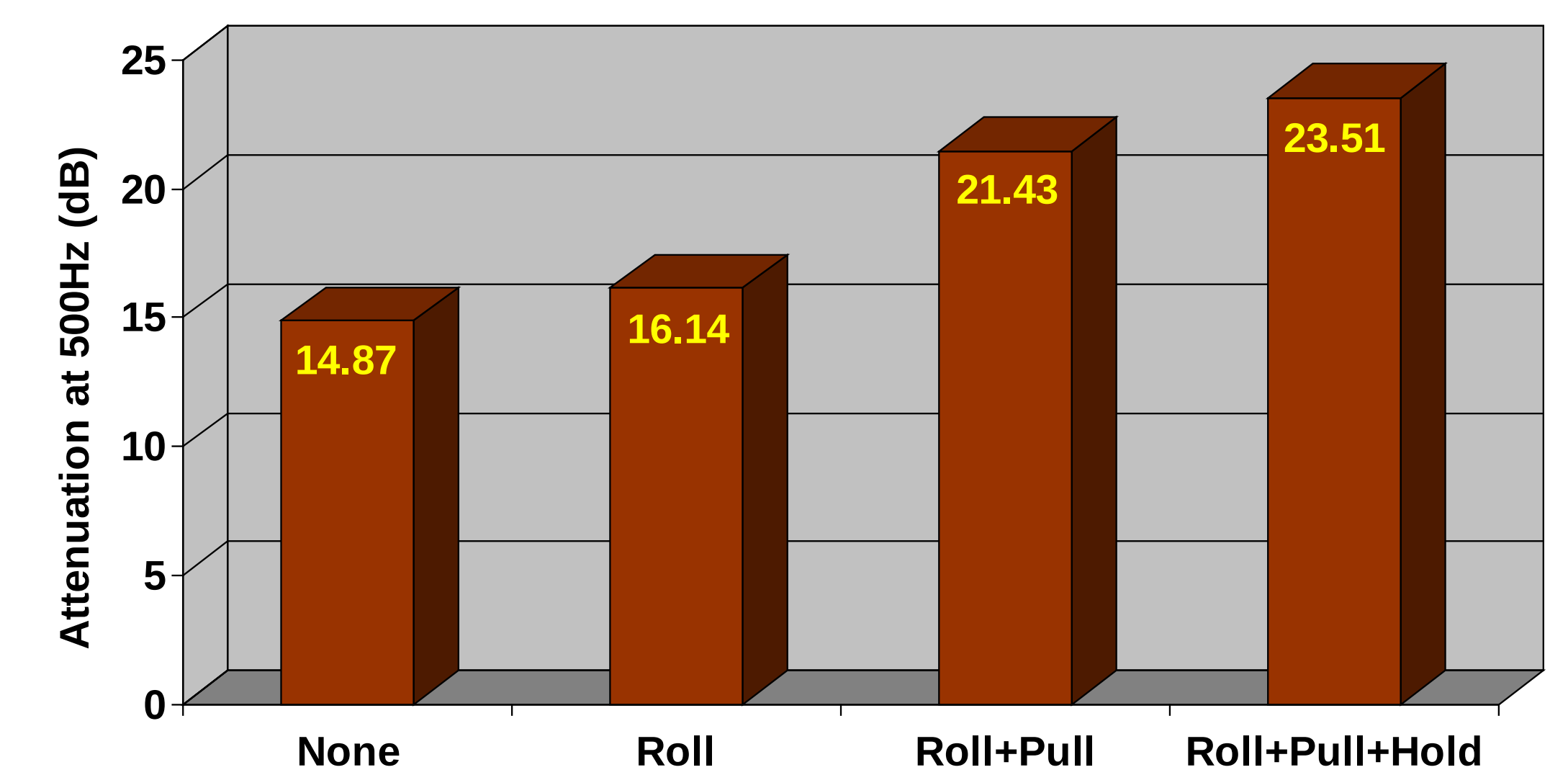
NIOSH Roll-Pull-Hold instructions

Evaluation

Successful completion of Roll-Pull-Hold steps



Improved protection



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